

WHAT IS CLAIMED IS:

1. A magnetic core comprising at least one gap in a magnetic path and a permanent magnet inserted in the gap, said magnetic case having an alternating current magnetic permeability at 20 kHz of 45 or more in a magnetic field of 120 Oe under application of direct current and a core loss characteristic of 100 kW/m^3 or less under the conditions of 20 kHz and a maximum magnetic flux density of 0.1 T.
2. The magnetic core according to claim 1, having initial permeability of 100 or more.
3. The magnetic core according to claim 1, comprising Ni-Zn ferrite or Mn-Zn ferrite, wherein the magnet is a bonded magnet comprising a rare-earth magnet powder and a binder.
4. The magnetic core according to claim 3, wherein the bonded magnet comprises the rare-earth magnet powder having an average particle diameter of $0 \text{ }\mu\text{m}$ to $10 \text{ }\mu\text{m}$ (excluding $0 \text{ }\mu\text{m}$) and the binder of 5 to 30 vol%, and also has a resistivity of $1 \text{ }\Omega\cdot\text{cm}$ or more and an intrinsic coercive force of 5 kOe or more.
5. The magnetic core according to claim 1, wherein the permanent magnet is a bonded magnet comprising a magnet powder dispersed in a resin, and has a resistivity of $0.1 \text{ }\Omega\cdot\text{cm}$ or more, the magnet powder having an intrinsic coercive force of 5 kOe or more, a Curie point T_c of 300°C or more, and an average particle diameter of $150 \text{ }\mu\text{m}$ or less.
6. The magnetic core according to claim 5, wherein the magnet powder has an average particle diameter of 2.0 to $50 \text{ }\mu\text{m}$.
7. The magnetic core according to claim 6, wherein the resin content is 10 vol% or more.

10039893-1024-01

8. The magnetic core according to claim 6, wherein the magnet powder is a rare-earth magnet powder.

9. The magnetic core according to claim 6, wherein a molding compressibility is 20% or more.

10. The magnetic core according to claim 6, wherein the rare-earth magnet powder is used for the bonded magnet and further comprises a silane coupling agent or titanium coupling agent.

11. The magnetic core according to claim 6, wherein the bonded magnet has anisotropy due to magnetic field orientation during production thereof.

12. The magnetic core according to claim 6, wherein the magnet powder is coated with a surfactant.

13. The magnetic core according to claim 6, wherein the permanent magnet has a center line average roughness of 10 μm or less.

14. The magnetic core according to claim 6, wherein the permanent magnet has a resistivity of 1 $\Omega\cdot\text{cm}$ or more.

15. The magnetic core according to claim 14, wherein the permanent magnet is produced by die molding.

16. The magnetic core according to claim 15, wherein the permanent magnet is produced by hot press.

17. The magnetic core according to claim 6, wherein the permanent magnet has the total thickness of 500 μm or less.

18. The magnetic core according to claim 17, wherein the permanent magnet is produced from a mixed coating of a resin and magnet powder by a film making method, such as a doctor blade method and printing method.

19. The magnetic core according to claim 17, wherein the permanent magnet has a surface glossiness of 25% or more.

10039893-102401

20. The magnetic core according to claim 6, wherein the resin is at least one selected from the group consisting of polypropylene resins, 6-nylon resins, 12-nylon resins, polyimide resins, polyethylene resins, and epoxy resins.

21. The magnetic core according to claim 6, wherein the surface of the permanent magnet is coated with a resin or a heat-resistant coating having a heat resistance temperature of 120°C or more.

22. The magnetic core according to claim 6, wherein the magnet powder is a rare-earth magnet powder selected from the group consisting of SmCo, NdFeB, and SmFeN.

23. The magnetic core according to claim 6, wherein the magnet powder has an intrinsic coercive force of 10 kOe or more, a Curie point of 500°C or more, and an average particle diameter of the powder of 2.5 to 50 μm .

24. The magnetic core according to claim 23, wherein the magnet powder is a Sm-Co magnet.

25. The magnetic core according to claim 23, wherein the SmCo rare-earth magnet powder is an alloy powder represented by $\text{Sm}(\text{Co}_{\text{bal}}\text{Fe}_{0.15} \text{ to } 0.25\text{Cu}_{0.05} \text{ to } 0.06\text{Zr}_{0.02} \text{ to } 0.03})_{7.0} \text{ to } 8.5$.

26. The magnetic core according to claim 23, wherein the resin content is 30 vol% or more.

27. The magnetic core according to claim 23, wherein the resin is at least one selected from the group consisting of polyimide resins, poly(amide-imide) resins, epoxy resins, poly(phenylene sulfide) resins, silicone resins, polyester resins, aromatic polyamide resins, and liquid crystal polymers.

Sub 28. An inductor component, wherein at least one turn of coil is applied to the magnetic core according to any one of claims 1 to 27.

10039893-102401